

Semantic Web Technologies II

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Semantic Web 2.0 III

Dr. Sudhir Agarwal
Dr. Stephan Grimm
Dr. Peter Haase
PD Dr. Pascal Hitzler
Denny Vrandečić



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- Semantic Web
 - BT Digital Library
 - Project Halo
- Semantic Web 2.0? Web 3.0?
 - Semantic Blogging
 - OntoGame
 - Other examples

Semantic Web

Definition Semantic Web

“The **Semantic Web** provides a common framework that allows **data** to be shared and reused across application, enterprise, and community boundaries. It is a collaborative effort led by W3C with participation from a large number of researchers and industrial partners. It is based on the Resource Description Framework.”

W3C, 2008

<http://www.w3.org/2001/sw/>

Semantic Web Technology Applications

- case studies in closed domains
- complex & comprehensive modeling
- team of knowledge engineers
- sophisticated reasoning
- unwieldy tools and obscure specifications

- **Semantic Web**
 - Linked data
 - Oder Anwendungen von Linked data
 - Nutzt Semantic Web Technologies
- **Semantic Web Technologies**
 - W3C Standards und ihre Anwendung
 - Insbesondere RDF, OWL, SPARQL
- **Semantic Technologies**
 - Viel mehr! Computer arbeiten mit Bedeutung
 - Bsp: Cyc, LSI, Tagging, WordNet, Regeln, WolframAlpha, Google Squared, True Knowledge ...

Semantic Web

Example: BT Digital Library

Scenario (BT Digital Library)

Bob works as technology analyst for British Telecom. His daily work includes research on new technological trends, market developments as well as the analysis of competitors.

*Bob's company maintains a **digital library** that gives access to a **repository of internal surveys and analysis documents**. The company also has a **license** with an **academic research database** which is accessed via a **separate interface**.*

*Depending on his work context, Bob uses the **topic hierarchies**, the **full-text search functionalities** or **metadata search facilities** provided by the two libraries to get access to the relevant data.*

*However, Bob is often annoyed by the **differing topic hierarchies and metadata schemes** used by the two libraries as well as by a **cumbersome syntax for metadata queries**.*

Heterogeneity of content

Heterogeneity of search facilities

Heterogeneity of data models (schemas)

Interface design challenge

Why Ontology-Based Digital Libraries?

Immediate support for unified structured queries against metadata and documents

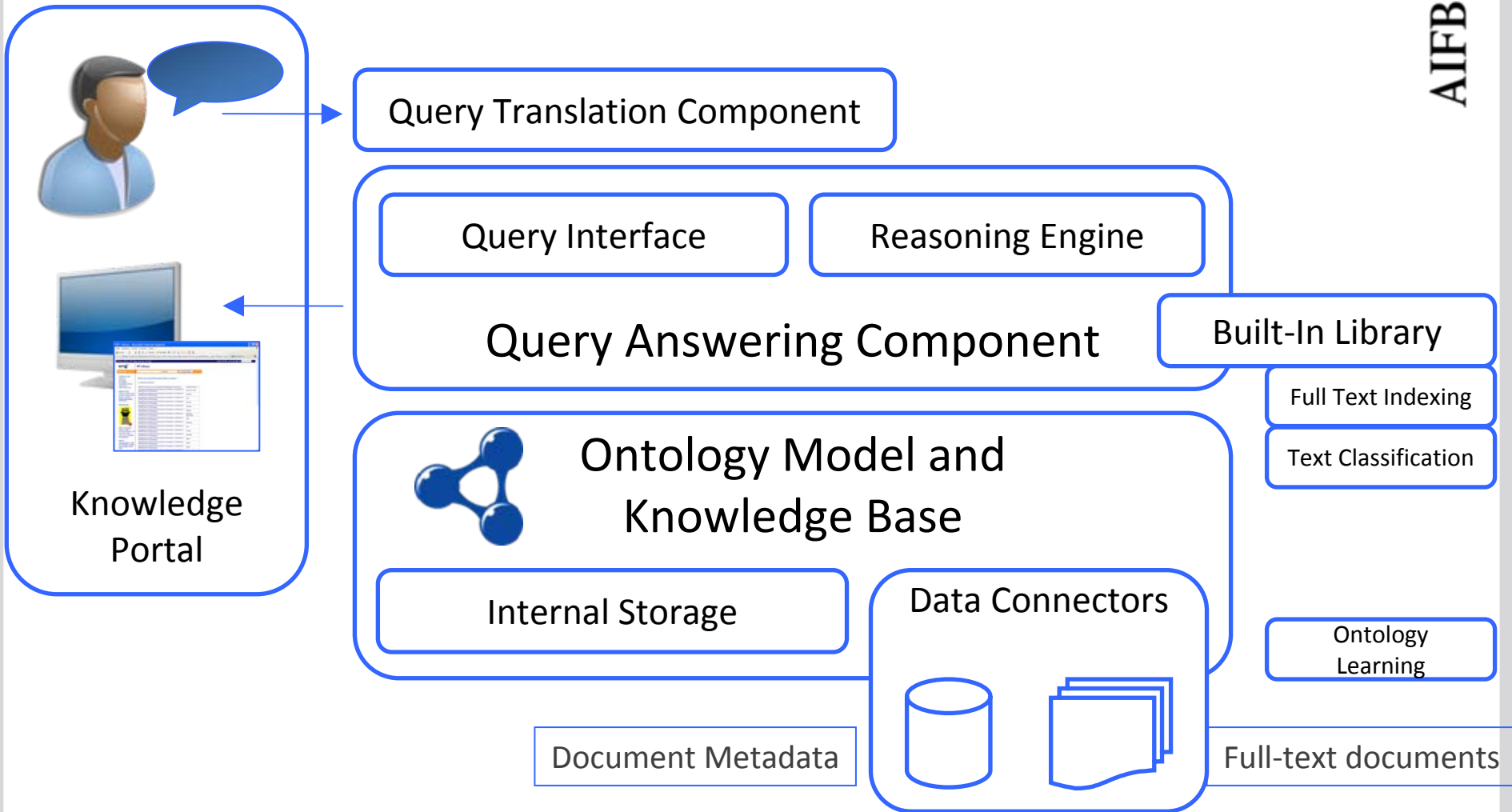
Easy integration of heterogeneous knowledge sources

Easy integration with knowledge elicitation methods from unstructured content

Mapping to natural language queries

Generic, flexible and modular architecture

Conceptual Architecture



Ontology Model and Knowledge Base

- Ontology (PROTON top level ontology)
 - global conceptual model
 - aligned with established schemas (e.g. Dublin Core)
- Knowledge base of the digital library
 - actual bibliographical metadata, topic hierarchies, and full-text document content
 - data aligned with global ontology via mapping axioms

swrc: Book	rdfs: subclassOf	protont: Document
expl : document5127	rdf: type	swrc: InProceedings
expl : document5127	protont: title	"Digital Libraries"



- Query answering against knowledge base (SPARQL)

```
SELECT ?x WHERE {  
  ?x rdf:type <http://proton.semanticweb.org/2005/04/protonu#Article> .  
  ?x <http://proton.semanticweb.org/2005/04/protont#hasSubject> ?y .  
  ?y rdfs:label ?z .  
  match(?z, "Intellectual Capital")  
}
```

- Presentation layer for underlying content
- Interaction via standard interfaces
 - keyword-search, topic browsers etc.
- Interaction via natural language queries
 - converts natural language queries into SPARQL
- Translation step comprises
 - deep parsing of the questions
 - roughly, linguistic frames become query constraints
 - lexicon describes possible realizations of elements

"Who wrote books on 'digital libraries'?"
"Which journal articles were written by 'Tim Berners-Lee' (and for which journal)?"



*“Which journal articles were written by
'Tim Berners-Lee' for which journal?”*



```
PREFIX protonu: <http://proton.semanticweb.org/2005/04/protonu#>  
PREFIX protont: <http://proton.semanticweb.org/2005/04/protont#>
```

```
SELECT ?x ?z WHERE {  
  ?x rdf:type protonu:Article .  
  ?x protont:documentAuthor ?y .  
  ?y rdfs:label ?ys .  
  match(?ys, "Tim Berners Lee") .  
  ?z rdf:type protonu:Journal .  
  ?x protonu:publishedWith ?z  
}
```



"The Semantic Web"
"WWW: Past, Present, and Future"
[...]

"The Scientific American"
"IEEE Computer"
[...]

The BT Digital Library

The screenshot shows a web browser window displaying the BT Digital Library interface. The address bar shows a local URL. The page has a navigation bar with links like 'BT Home', 'BT A-Z', 'BT Today', 'Services', and 'BT Help'. A search bar is present with the text 'Search BT or Directory for'. The main content area shows a search result for the query 'Which document talks about which concept?'. The result indicates '31 answer(s) retrieved' and lists various concepts and their associated documents. A blue arrow points to the search query box.


BT Library

Library home All Areas

Library Links
About Us
Acronyms
BT Patents
Information Spaces
Journal List
Other Resources

What's New
There are many more journals in the Library for you. Visit the [What's New page](#) to see the list.

New Books

 **Shake That Brain!**
How to Create Winning Solutions and Have Fun While You're at It - [Buy this from Amazon](#) **10% off**

HELP!

Which document talks about which concept ?

31 answer(s) retrieved

WebDAV based open source collaborative development environment	network protocol
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	decision maker
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	strategy
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	role
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	discuss
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	analysis
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	relation
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	problem description
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	skill
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	teaching
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	use
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	insight
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	situation
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	effect
Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy	

Screenshot from BT Digital Library

Semantic Web

Example: Project Halo

Project Halo

- “Building a digital Aristotle”
- A system that...
 - Encompasses much of the world’s knowledge
 - Reasons over that knowledge
 - Answers novel scientific questions
 - Explains these answers
 - Is quite ambitious
- Multi-stage effort:
 - Start with a specific science (Chemistry)
 - Challenge with several teams
 - Answer AP-style questions
- Complete information at <http://www.projecthalo.com/>



Formalizing questions

■ Example

Which of the following compounds will produce a gas when HCl is added to the solid compound? HCl is a strong acid producing a yellow-green colored gas above the acid solution.

- $\text{Ba}(\text{OH})_2 (\text{s})$
- $\text{CaCO}_3 (\text{s})$
- $\text{CuSO}_4 (\text{s})$
- $\text{Na}_3\text{PO}_4 (\text{s})$
- $\text{NaCl} (\text{s})$

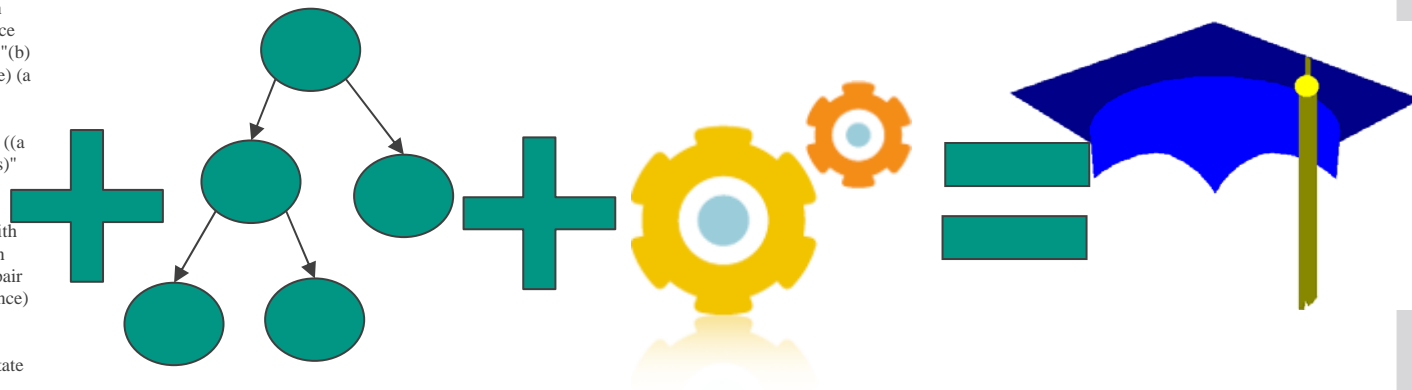
Formalized

```
(every QF1 has (context ((:pair "(a) Ba(OH)2(s)"
(a Reaction with (raw-material ((a HCl-
Substance) (a Ba_OH_2-Substance with (state
((a State-Value with (value (*solid))))))))) (:pair
"(b) CaCO3(s)" (a Reaction with (raw-material
((a HCl-Substance) (a CaCO3-Substance with
(state ((a State-Value with (value (*solid)))))))))
(:pair "(c) CuSO4(s)" (a Reaction with (raw-
material ((a HCl-Substance) (a CuSO4-
Substance with (state ((a State-Value with (value
(*solid))))))))) (:pair "(d) Na3PO4(s)" (a
Reaction with (raw-material ((a HCl-Substance)
(a Ionic-Compound-Substance with (state ((a
State-Value with (value (*solid)))))) (has-basic-
structural-unit ((a Ionic-Compound with (nested-
atomic-chemical-formula ((a Chemical-Formula
with (term ((:seq (:pair 3 Na) (:pair 1 P) (:pair 4
O))))))))) (:pair "(e) NaCl(s)" (a Reaction
with (raw-material ((a HCl-Substance) (a NaCl-
Substance with (state ((a State-Value with (value
*solid))))))))) (output ((forall (the context of
Self) where (oneof2 (the result of (the2 of It))
where ((the value of (the state of It2)) = *gas))
(the1 of It) (comm [QF1-output-1] Self))))))
```

Background knowledge

- Formalizing questions is “just” question understanding
- Needs a huge amount of background knowledge = ontology
- And a reasoner to answer the question using the ontology

```
(every QF1 has (context ((:pair "(a) Ba(OH)2(s)" (a Reaction
with (raw-material ((a HCl-Substance) (a Ba_OH_2-Substance
with (state ((a State-Value with (value (*solid))))))))) (:pair "(b)
CaCO3(s)" (a Reaction with (raw-material ((a HCl-Substance) (a
CaO3-Substance with (state ((a State-Value with (value
(*solid))))))))) (:pair "(c) CuSO4(s)" (a Reaction with (raw-
material ((a HCl-Substance) (a CuSO4-Substance with (state ((a
State-Value with (value (*solid))))))))) (:pair "(d) Na3PO4(s)"
(a Reaction with (raw-material ((a HCl-Substance) (a Ionic-
Compound-Substance with (state ((a State-Value with (value
(*solid)))) (has-basic-structural-unit ((a Ionic-Compound with
(nested-atomic-chemical-formula ((a Chemical-Formula with
(term ((:seq (:pair 3 Na) (:pair 1 P) (:pair 4 O))))))))) (:pair
"(e) NaCl(s)" (a Reaction with (raw-material ((a HCl-Substance)
(a NaCl-Substance with (state ((a State-Value with (value
(*solid))))))))) (output ((forall (the context of Self) where
(oneof2 (the result of (the2 of It) where ((the value of (the state
of It2)) = *gas)) (the1 of It) (comm [QF1-output-1] Self))))))
```




Evaluation

- Correctness
 - Was pretty high
- Justification
 - Considerably lower than correctness
- Speed
 - Was critical, but all systems faired well
- Results:
 - Human mean average in this test is AP-2.82
 - Project Halo scored an AP-3 – they would have passed!



Result browser

- <http://www.projecthalo.com/halotempl.asp?cid=2>



QUESTION CHOOSER

MC1 Which of the following compounds will produce a gas when HCl is added to the solid compound? HCl is a strong acid producing a yellow-green colored gas above the acid solution.

MC2 When lithium metal is reacted with nitrogen gas, under proper conditions, the product is:

MC3 Sodium azide is used in air bags to rapidly produce gas to inflate the bag. The products of the decomposition reaction are:

MC4 When calcium carbonate is heated it decomposes forming:

Calcium carbonate reacts with acids to produce gas

MC5 The most likely products for the reaction of NH3 with oxygen are:

Oxygen is reactive with many chemical compounds while nitrogen gas is very unreactive.

MC6 Which solution has the highest conductivity?

MC7 Which of the following is a non-electrolyte?

MC8 Which of the following combinations would produce a precipitate?

MC9 A solution of nickel nitrate and

RESULTS BROWSER

BROWSE QUESTIONS: << PREV | NEXT >>

QUESTION MC 1

Which of the following compounds will produce a gas when HCl is added to the solid compound? HCl is a strong acid producing a yellow-green colored gas above the acid solution.

a. Ba(OH)₂ (s)
b. CaCO₃ (s)
c. CuSO₄ (s)
d. Na₃PO₄(s)
e. NaCl(s)

CORRECT ANSWER

(b) CaCO₃ (s)

HIDE ANSWER

RESULTS DETAIL

SCORING MATRIX

TEAMS	ENCODING	SME I GRADES			SME II GRADES			SME III GRADES		
		ANSWER	JUST.	VIEW	ANSWER	JUST.	VIEW	ANSWER	JUST.	VIEW
CYCORP		0/1.0	0/1.0		0/1.0	0/1.0		0/1.0	0/1.0	
ONTOPRISE		1/1.0	0/1.0		1/1.0	0/1.0		1/1.0	0/1.0	
SRI		1/1.0	0.5/1.0		1/1.0	1/1.0		1/1.0	0/1.0	

MORE INFO:

Semantic Web 2.0

Semantic Web of Data

- A World Wide Web (of data)
- Bottom-up, user-centred approach
- “A little semantics goes a long way”

Creation

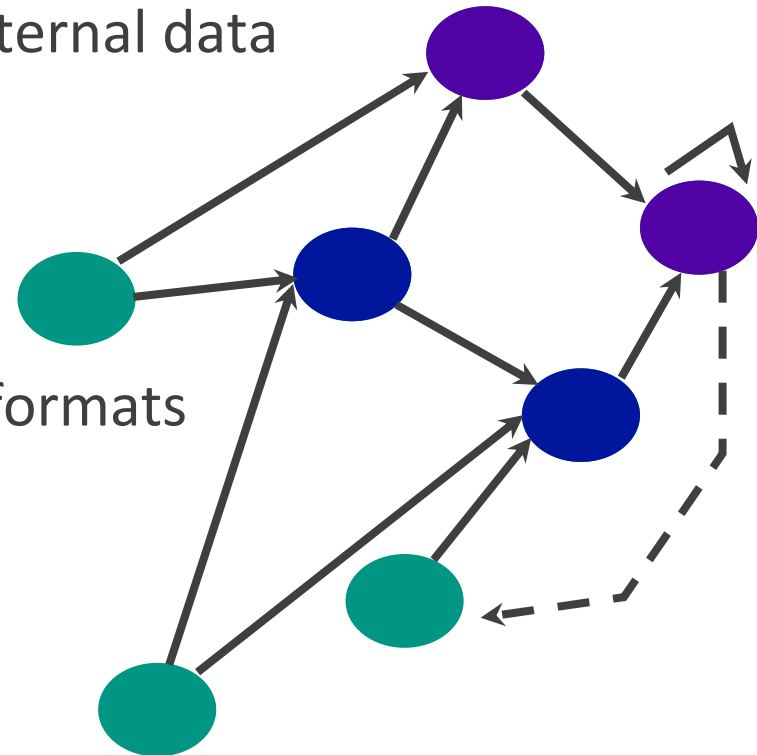
- expose application-internal data
- tags

Exchange

- aggregators
- other data, e.g microformats
- data reconciliation

Reuse

- mashups



Semantic Web Application

- Nicht notwendig: RDF Backend
 - Implementierung ist irrelevant
 - Kann aber auch RDF-basiert sein – Joost
- Wichtig: Schnittstellen nach außen
 - RDF
 - SPARQL
 - Datenaustausch
- Nicht sein sondern scheinen

Semantic Web 2.0

Idea: Semantic Blogging

Chrissie's Blog



- loves to blog about movies she's seen for her friends
- “typical blogger”
 - blogging for 3 years
 - knows some HTML and CSS
 - can subscribe to RSS feeds
 - no knowledge of Semantic Web

Everything pink - Chrissies blog

Archive

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[May 2007](#)

[April 2007](#)

[March 2007](#)

About me

[RSS-Feed](#)

Blogroll

[nutkidz](#)

[nakit-arts](#)

[Blog of the rings](#)

[Matrix Reblogged](#)

Links

[Gloria Cinema](#)

[Ecoshop](#)

[Legolas fanzine](#)

Pirates of the Caribbean 3

June 21st, 2007

I just went with [Till](#) into the last part of the Pirates of the Caribbean, where our heroes (the adoringly cute [Orlando Bloom](#) and Keira Knightly reprise their roles) go to the end of the world to save the one and only Captain Jack Sparrow ([Johnny Depp](#)! xOxOx!) from the claws of the Kraken. And guess what - Jack Sparrows daddy has a special appearance, played by old Rolling Stone Keith Richards! Weeeeha!

Best movie of the year, until know, without a question! Tons of fun, and colorful action.

no comments yet – [post your comment](#) - [backtrack](#)

Chrissie's blog workflow



- create new entry
 - enter title, write text, annotate with few tags like genre
- publish
 - entry saved in blog database
 - entry displayed on front page, archived, added to RSS feeds

Chrissie's **Smooov** blog workflow



- configure **Smooov** to show certain info
- create new entry
 - specify writing movie review, enter title, write text, identify movie, annotate with few tags
- publish
 - entry saved in blog database
 - **Smooov processes entry**
 - entry displayed on front page, archived, added to RSS feeds

Everything pink - Chrissies blog

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Director **George Verbinski**
Running time 126 minutes
Starring **Johnny Depp, Keira Knightley, Bill Nighy, Orlando Bloom, Geoffrey Rush**
Info from **Wikipedia**

no comments yet – [post your comment](#) - [backtrack](#)

Everything pink - Chrissies blog

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Pirates of the Caribbean 3

June 21st, 2007

I just went with **Till** into the last part of the Pirates of the Caribbean, where our heroes (the adoringly cute **Orlando Bloom**

See Pirates of the Caribbean 3
in the **Gloria**:

Today 16:00, 18:30, 21:00

Tomorrow 16:00, 18:30, 21:00

[Reserve tickets now](#)

Old Rolling Stone Keith Richards:
Weeeeha!

Best movie of the year, until know,
without a question! Tons of fun, and
colorful action.

no comments yet – [post your comment](#) - [backtrack](#)



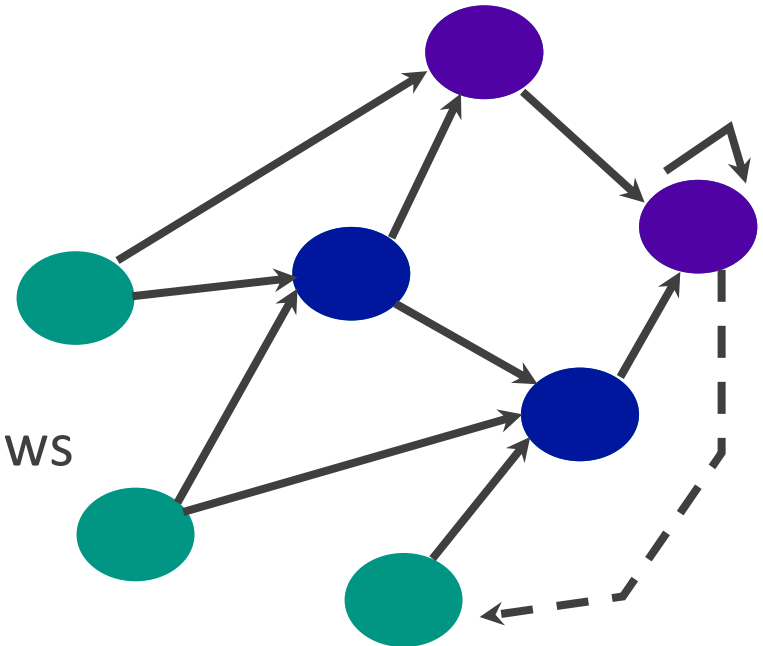
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See Pirates of the Caribbean 3
in the **Gloria**:
Today 16:00, 18:30, 21:00
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Web Data Ecosystem



- Exchange
- show aggregated reviews
- Reuse
- spot trends
- immediately produce meaningful movie recommendations



Web 2.0 or Semantic Web

blogging (use context)

AJAX (dynamic display)

interlinking of data (mashup)

large-scale interlinking of data

proprietary APIs

standardised APIs

niche vocabularies

comprehensive ontologies

screenscraping/RSS

well-defined data export

data reconciliation

Web 2.0 or Semantic Web

blogging

AJAX

large-scale interlinking of data

standardised APIs

niche vocabularies

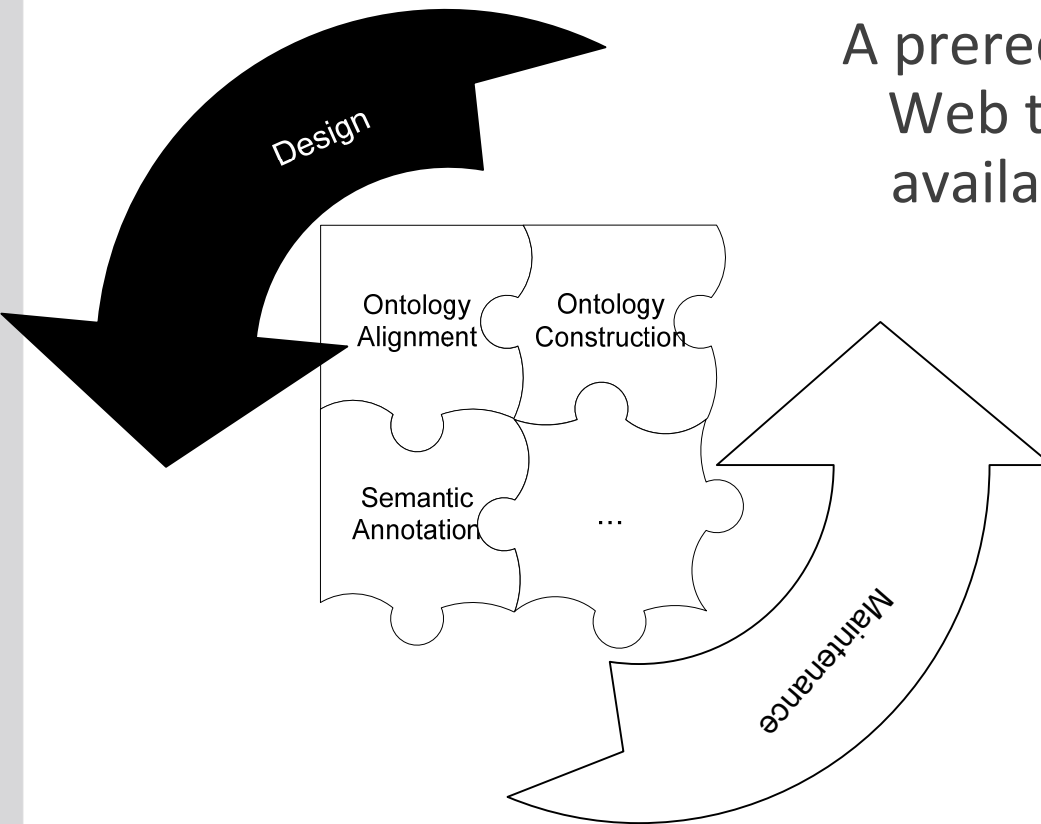
well-defined data export

data reconciliation

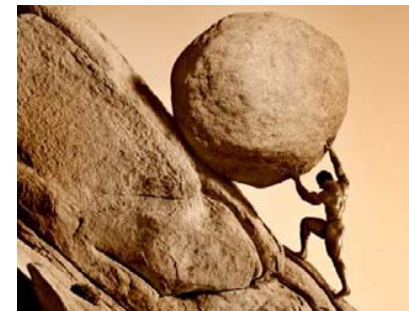
Semantic Web 2.0

Example: OntoGame

Lack of Human Contribution



A prerequisite for the Semantic Web to become a reality is the availability of **annotated data**.



Building the Semantic Web is not a one-time task, but a **continuous effort**.

**There are tasks that are easy for humans but
difficult for computers**



Cf. Von Ahn

Not all the tasks on the Semantic Web can be
automated.

Some at least partly require human intelligence.

The Million Dollar Question

How can we motivate people to dedicate their valuable time to build the Semantic Web?

- The EU can fund it
- We can hope for pure altruism
- **We can make it fun!**

A Huge Success: Luis von Ahn's Games with a Purpose

10
MILLION
LABELS
COLLECTED

The ESP Game

As seen on CNN and
newspapers around the world!



Some people are playing the game **more than 40 hours** per week.

The game collected **more than 10 million consensual image labels.**

Make people weave the Semantic Web by playing cool multi-player online games.

1. Fun and intellectual challenge
2. Consensus
3. Massive content generation

10 Challenges

1. Identifying suitable tasks in semantic content creation
2. Designing games
3. Designing a usable, attractive interface
4. Identifying suitable knowledge corpora
5. Preventing cheating
6. Defusing typical pitfalls of conceptual modeling
7. Distribution of labor
8. Fostering user participation
9. Deriving formal representations
10. Scalability and performance

OntoPronto: Creating a Huge Domain Ontology

ontogame

The screenshot shows the 'ontogame' interface. At the top, a black panther silhouette is above the 'ontogame' logo. To the right, two black boxes display 'time left' as 1:44 and 'score' as 2. The main yellow area contains the text 'all data taken from wikipedia.org' and a definition of 'Lupicinus' as a Roman lieutenant of Valens in Thrace in the late fourth century AD, with a small bust image. Below this is a cyan box for 'your choice' with two radio buttons for 'single object or happening = instance' and 'set/type of objects = class'. A 'hint' section provides examples: '„Dog“ is a class (as several entities of this class exist)' and '„Lassie“ is an instance'. At the bottom, a black bar shows 'YOUR PARTNER INFO' and two buttons, 'SKIP' and 'OK'.

ontogame

time left
1:44

score
2

all data taken from wikipedia.org

Lupicinus
Lupicinus was a roman lietenant of Valens in Thrace in the late fourth century AD.[1]

your choice

Is this wikipedia page about a:

single object or happening
= instance → ☐

or rather describing a:
set/type of objects
= class ← ☐

hint → „Dog“ is a class (as several entities of this class exist)
„Lassie“ is an instance

YOUR PARTNER INFO

SKIP OK

OntoTube: Annotating YouTube videos



time left 1:43 score 30

ontogame

all videos taken from YouTube

Tim Berners Lee on the Semantic Web



Tim Berners Lee
Director, World Wide Web Consortium

Is this video fiction or non fiction ?

☐ ☒

YOUR AGREED ON - NON FICTION

SKIP OK

The interface is designed to look like a handheld game device. At the top, a black cheetah silhouette is positioned above the 'ontogame' logo. To the right of the logo, two black rectangular boxes display 'time left 1:43' and 'score 30'. Below the logo, a black bar contains the text 'all videos taken from YouTube' and 'Tim Berners Lee on the Semantic Web'. The central part of the device is a video player showing a man in a blue shirt (Tim Berners Lee) speaking. Below the video player is a standard video control bar with play, pause, and volume icons. Below the control bar, the text 'Is this video fiction or non fiction ?' is displayed. Underneath this text are two radio buttons; the second one, labeled 'non fiction', is selected. At the bottom of the device, a black bar displays 'YOUR AGREED ON - NON FICTION'. Below this bar are two buttons: a green 'SKIP' button and an orange 'OK' button.

- Snapshot of RDF data 2 weeks after release
- 271 registered players within 2 weeks, 90% male
- More than 2500 games, 400 articles
- Is the game fun?
- Is the ontological data produced correct?

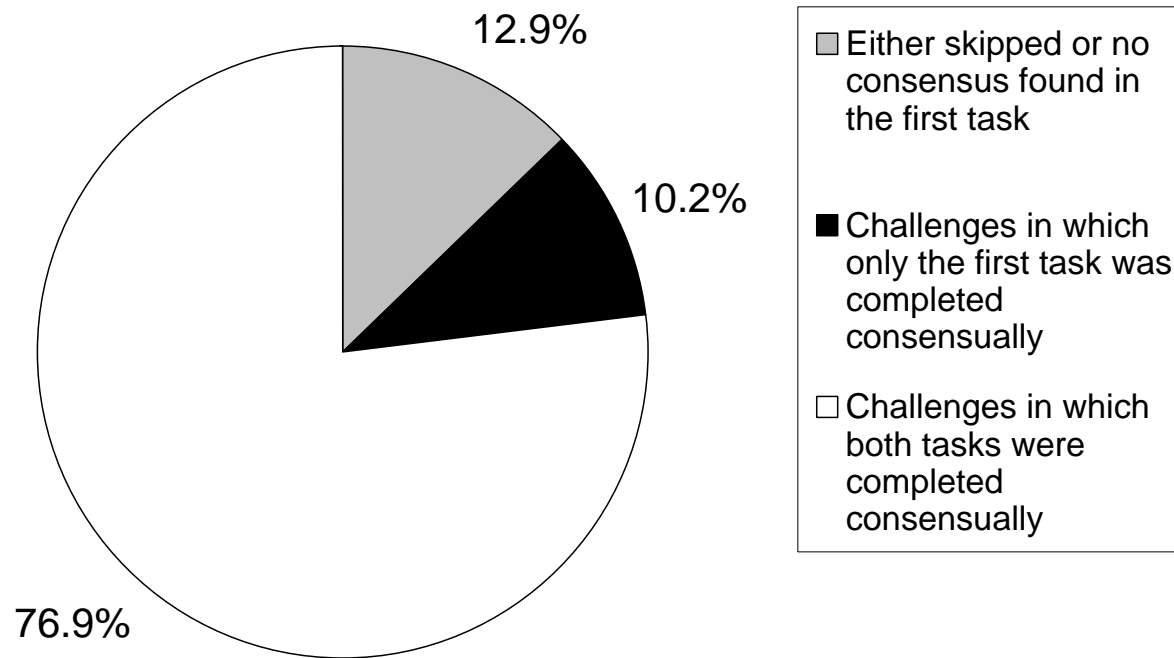
Katharina Siorpaes and Martin Hepp: Games with a Purpose for the Semantic Web.

IEEE Intelligent Systems, Vol. 23, No. 3, pp. 50-60, May/June 2008.

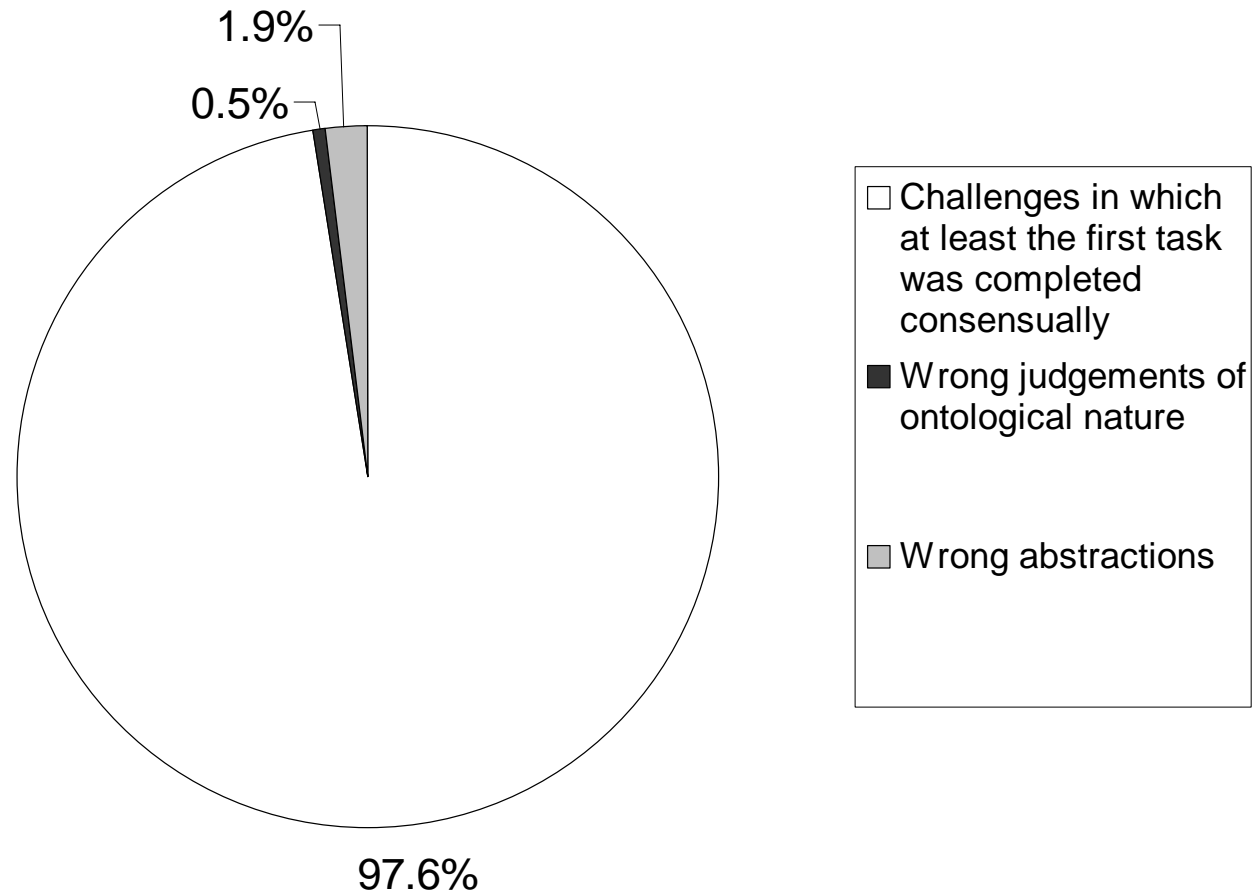
Fun Factor

- 35 players completed a survey
- Rules were understandable
- Entertaining (enthusiasts over-represented)
- Most rated the game „cool“ and entertaining
- Side effects: learning PROTON and Wikipedia
- Social component is weak (no communication, gender, age, nationality, etc.)
- „Constructive entertainment“

Consensus



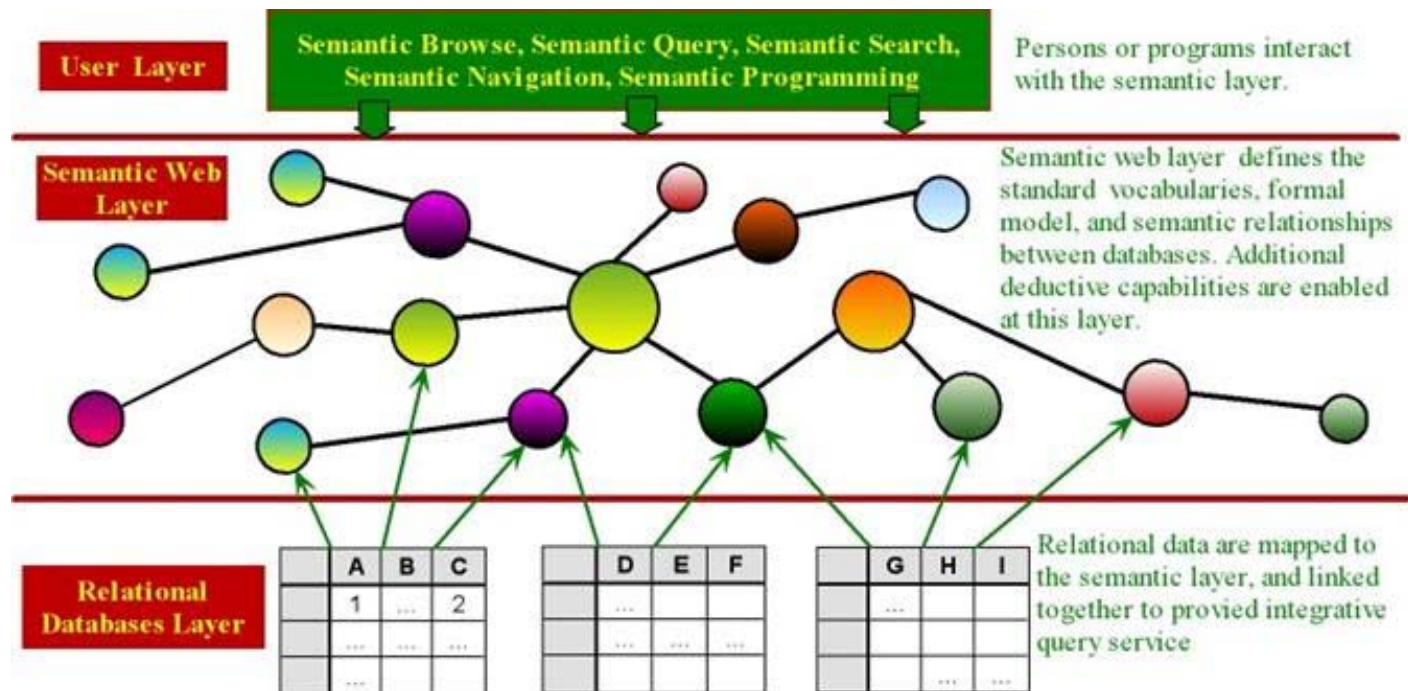
Correctness



- Obviously, games for ontology construction, population, and alignment will not solve the knowledge acquisition bottleneck
- But they are a new way of combining human and computational intelligence and providing incentives
- Promising results
- Further incentives by increasing the human factor – e.g. „Meet your soulmate game“ 😊

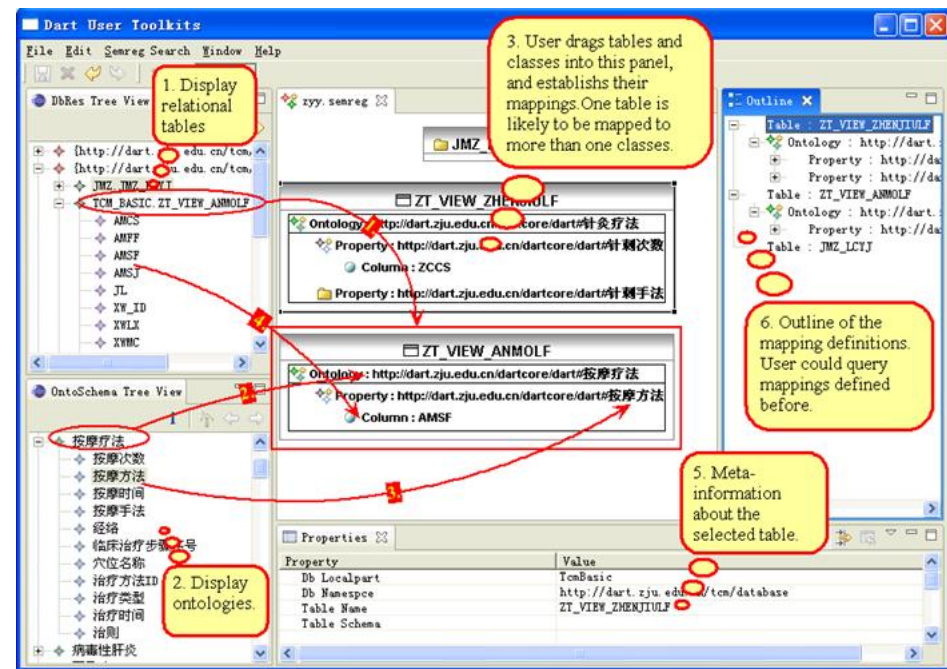
Kurze Beispiele

- Problem: Information über Traditionelle Chinesische Medizin (TCM) ist über **viele Institute und Datenbanken** in China verteilt. Die Datenstrukturen sind völlig unterschiedlich.
- Lösung: Integration der Datenbanken in einen verteilten Semantischen Grid, Suche und Dienste auf den integrierten Daten



Courtesy of Huajun Chen, Zhejiang University, CACSM ([SWEO Case Study](#))

- Datenintegration mit DartMapping
 - <http://ccnt.zju.edu.cn/projects/dartmapping/>
 - Tool zum Mapping der Relationalen Datenbanken in die Ontologie
- definiert Regeln, mit denen SPARQL queries in SQL umgewandelt werden
- Daten aus verschiedenen Datenbanken durch Ontologie vernetzt



- <http://search.cintcm.com/TcmSearch/tcmBasicSearch.luc>
- online seit 2005
- Suchanfragen werden mit der Ontologie ausgedrückt

The screenshot shows the TCM search interface with several annotations:

- Ontological classes:** A red box highlights the 'Ontological classes' section on the left, which lists various TCM concepts like 'Acupuncture points', 'Herbs', etc.
- Synonyms and Paronyms:** A red box highlights the 'Synonyms and Paronyms' section on the right, which lists related terms for a selected concept.
- Semantic association:** A red box highlights the 'Semantic association' section on the right, which shows the relationships between different concepts.
- Based on the semantic relations defined at the ontological level, user can keep searching and navigating over the integrated databases without the awareness of the database boundaries.** A yellow speech bubble points to the search results area.
- When full text search returns too much results, clicking the classes leads to a dynamic form-based query interface by which user could specify semantic query, thereby getting more accurate and appropriate results.** A yellow speech bubble points to the 'Ontological classes' section.

Vodafone live!

- Problem: Vodafone ist einer der größten Mobilfunkkonzerne der Welt. Verschiedene Anbieter liefern Content (Klingeltöne, Spiele, etc) die über die Plattform *Vodafone live!* weltweit vertrieben wird. Die Daten verschiedenster Anbieter müssen integriert werden, sie sind komplex
- Lösung: Vodafone live! veröffentlichte ein RDF Vokabular, das die Content Provider einhalten. Die Metadaten werden in RDF geliefert und die Inhalte darüber in die Plattform integriert
- Projekt:
 - Content ist primär Klingeltöne, Spiele, Wallpapers.
 - Metadaten über: kompatibles Endgerät, Content Ratings (Adult, Gaming, Violence, ...), Gültigkeitsdauer des Angebots
 - Genaue Dokumentation, Validierung des XML über XML Schema
 - Einbindung der Provider wichtig



Courtesy of Kevin Smith, Vodafone Group R & D ([SWEO Use Case](#))

Vodafone live!

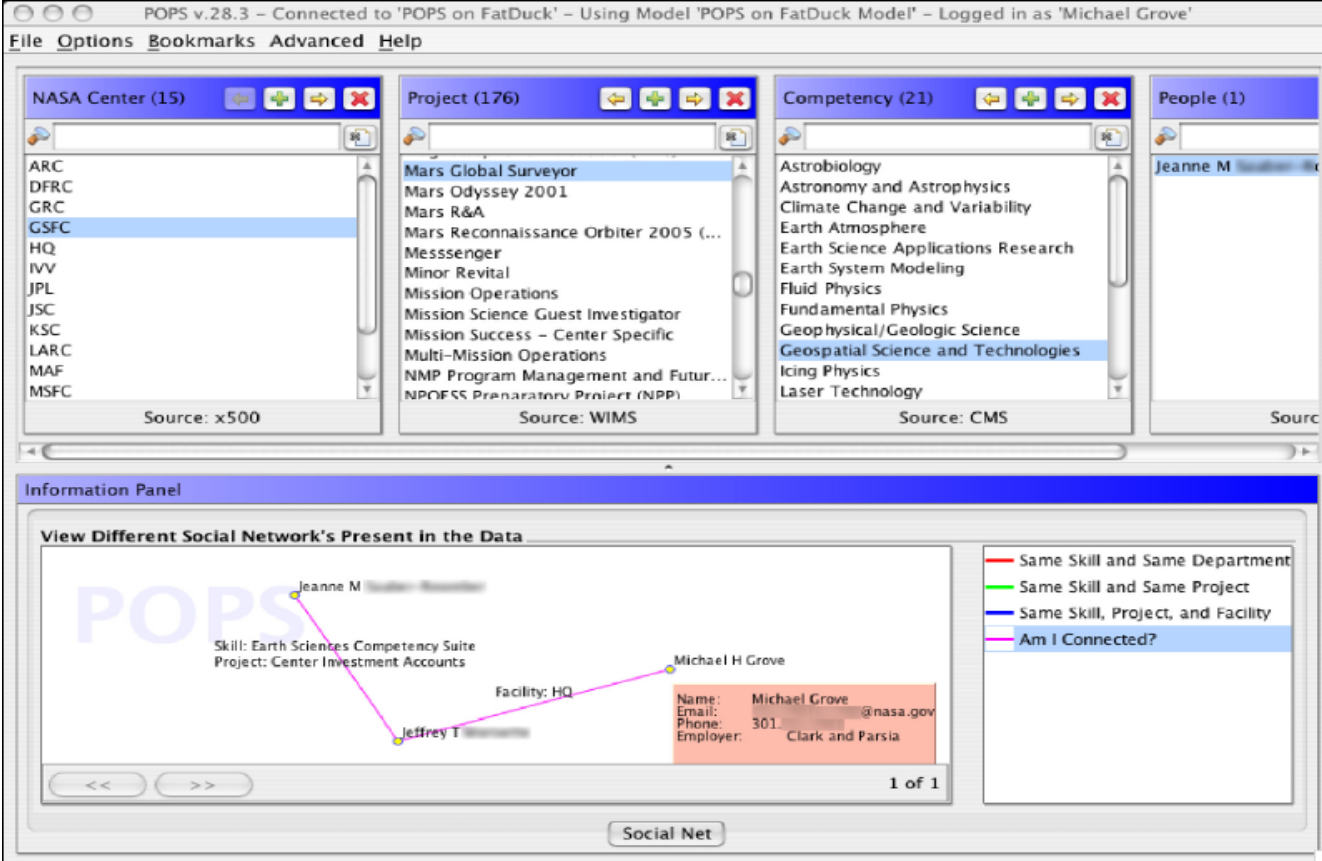
- Drei Vokabulare verwendet
 - Dublin Core für Metadaten
 - [PRISM](#) für Embargos und Gültigkeitsdaten
 - [Internet Content Ratings Association \(ICRA\)](#)
Vokabular für Bewertung nach Gewalt, Erotik, oder Gambling
 - Wenige Erweiterungen
- Über das Portal kann nun der Benutzer sein Profil eingeben (Endgerät, Rating) und spezifische Inhalte finden
- Erhöhte den Umsatz signifikant, da durch die präzise Beschreibung die Inhalte besser gefunden wurden



Courtesy of Kevin Smith, Vodafone Group R & D ([SWEQ Use Case](#))

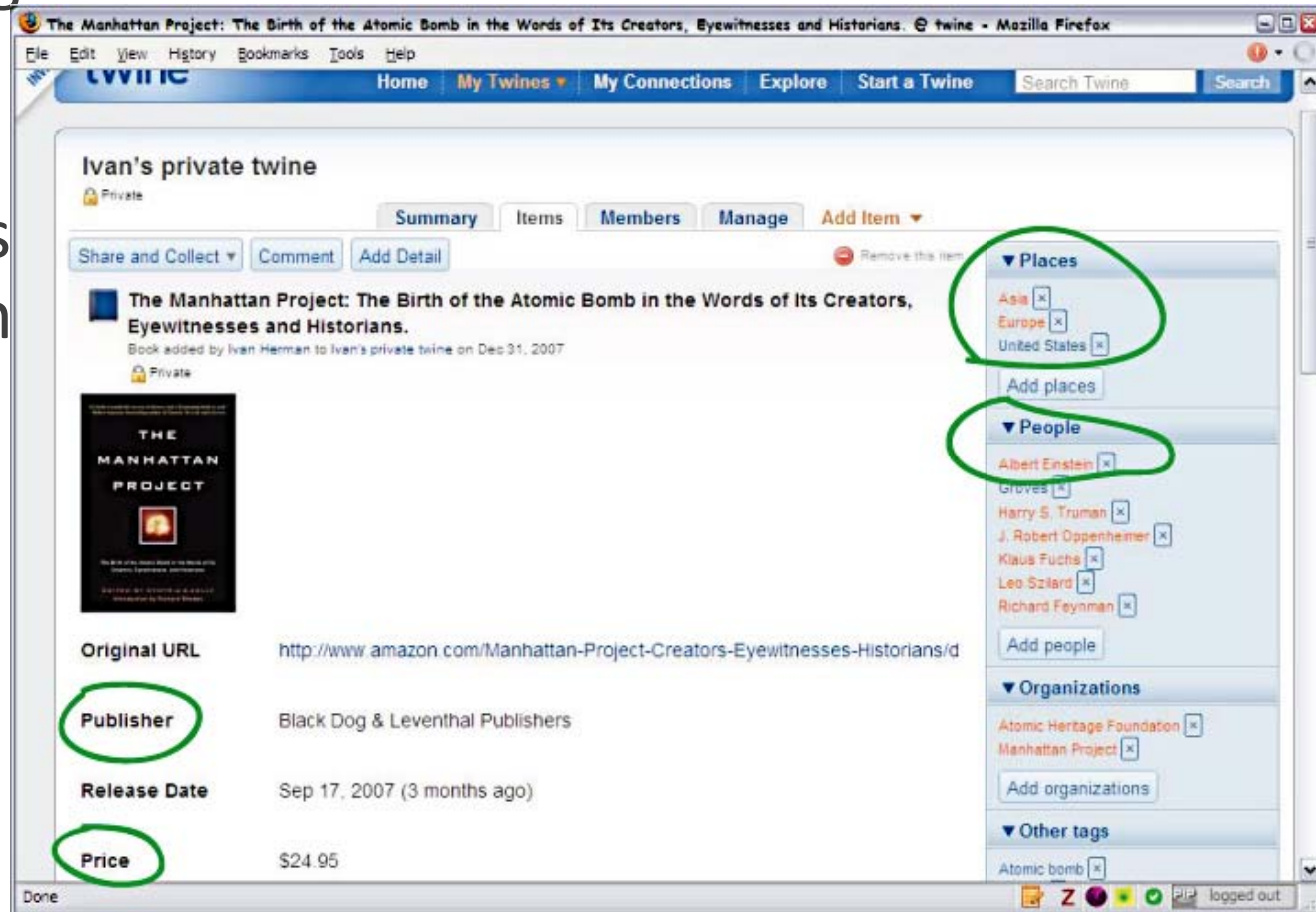
NASA Expert Finder

Expertise locator for nearly 70,000 NASA civil servants using RDF integration techniques over 6 or 7 geographically distributed databases, data sources, and web services...



Twine

- “Social Bookmarking on Steroids”
- Item relationships are based on ontologies
- Internals in RDF, will be available via APIs and SPARQL

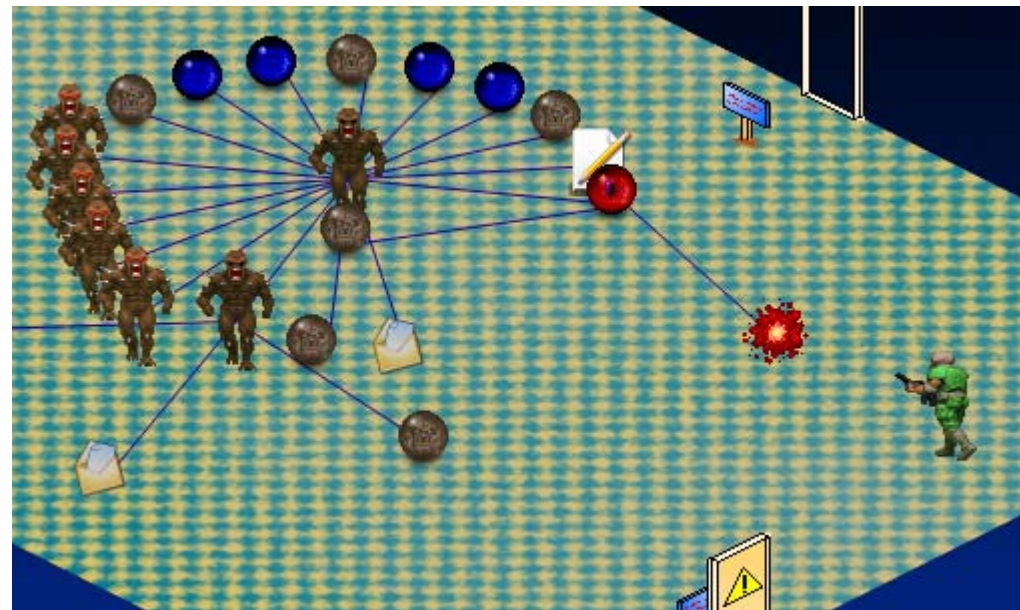


RDFRoom



- www.dfki.uni-kl.de/~grimnes/2006/03/RDFRoom/
- RDFRoom is an isometric RDF viewer. It gives the user ways to view and manipulate his RDF data that might make him see the data in a brand new perspective.

“A lone soldier has been stranded in an alien world, filled with resources, literals and shifty anonymous nodes. Room upon room are filled with named graphs - can he find a way out?”



Dank

- Folien und Bilder von Katharina Siorpaes, Max Völkel, Anupriya Ankolekar, Leo Sauermann, Ivan Herman, Tim Berners-Lee und anderen

Current Semantic Web Layer Cake

